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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,995

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Takue Tsuji

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SUITE 1100

WASHINGTON, DC 20006

EXAMINER

SASTRI, SATYA B

ART UNIT

PAPER NUMBER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/584,995	Applicant(s) TSUJI, TAKUE	
	Examiner SATYA B. SASTRI	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/5/09</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to amendment filed on 6/16/09. Claims 1-9 are now pending in the application.

Claim Objections

2. Claims 1 and 2 are objected to for the lack of clarity in the claim language. Claim 2 was originally objected to in the office action dated 3/23/09 (paragraph 2) for lack of clarity, however, the same confusing language is now incorporated into claim 1. The claims should be amended to recite that the components are mixed at a maximum temperature of 140°C or less, using an unambiguous language. The claims should be amended appropriately to the extent supported by the disclosure.

Previously Cited Statutes

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Imamura et al. (US 4,214,058) or Aoyoma (JP 05065370, English abstract, cited in the IDS) alone or in view of Mauer et al. (US 4,654,271) and further as evidenced by <https://fscimage.fishersci.com/msds/95661.htm> .

At the outset, it is noted that in the previous office action dated 3/23/09, on page 4, claim 2 is inadvertently referred to as claim 3 while discussing the limitation drawn to mixing temperature recited in the claim. The rejection of original claim 2 is adequately presented therein and is incorporated herein by reference. Given that the limitation of original claim 2 is now incorporated into amended claim 1, the rejection as set forth for claim 2 in the previous office action is now extended to presently cited claim 1. Further, claims 3-9 stand rejected as set forth in the previous office action.

Additionally, with regard to presently recited claim 2 that recites a new limitation from the specification, it would have been obvious to one of ordinary skill in the art to optimize the mixing temperature for Imamura et al. or Aoyama compositions and thereby arrive at the optimal mixing temperature, including those that within the scope of present invention. One skilled in the art would aim to mix at temperatures that would soften the rubber component adequately but not commence the vulcanization process, so as to achieve good dispersion. As such, the Imamura et al. reference also discloses that the vulcanization temperature may be from 100° to 200°C, preferably from 130° to 170°C (col. 4, lines 37-40). Thus, it would have been obvious to one skilled in the art to perform mixing step at temperatures below the vulcanization temperature, because with the onset of vulcanization, viscosity would increase rapidly making it difficult to accomplish uniform mixing.

Newly added claim 9 recites a particle size of metal acetylacetonate as ranging from 10 to 20 μm . Given the teaching by Mauer et al. reference that the preferred particle size of adhesion promoter is less than 70 μm to ensure adequate dispersion (col. 5, lines

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36-47), it would have been obvious to one of ordinary skill in the art to utilize an adhesion promoter (i.e. cobalt acetylacetonate) having any particle size less than 70 μm , including those that fall within the scope of present invention, in the rubber compositions of Imamura et al. or Aoyama references.

Response to Arguments

5. Applicant's note that the present invention resides in the use of 0.1 to 3 parts by wt., per 100 parts by wt. of rubber, of metal acetylacetonate having a particle size of 50 μm , wherein the rubber component and metal acetylacetonate are mixed by controlling the highest temperature reached during mixing to 140°C or less.

With regard to the Imamura et al. and the Aoyama references, applicants argue that the references neither teaches the particle size of 50 μm or less nor the mixing temperature of 140°C or less, as presently claimed.

In response, examiner notes that as indicated in the earlier office action (page 3), use of adhesion promoter, i.e. cobalt acetylacetonate, in the form of microparticles would be advantageous from the standpoint of accomplishing uniform dispersion in the rubber matrix of Imamura et al. or Aoyama compositions. Furthermore, the secondary reference to Mauer et al. discloses that the preferred particle size of adhesion promoter is less than 70 μm to ensure adequate dispersion (col. 5, lines 36-47), when the adhesion promoter is a high melting solid. Thus, any particle size less than 70 μm , including those that fall

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within the scope of present invention, of the adhesion promoter, i.e. cobalt acetylacetonate is deemed obvious over Mauer et al. disclosure.

Applicants argue that the data in Table II of the instant disclosure shows criticality for the presently claimed particle size of 50 μm or less. Applicants note that a superior strength at break is seen with compositions comprising a particle size of 10 μm , 20 μm or 50 μm as compared to those comprising 100 μm or 200 μm that fall outside of the presently claimed range. It is noted that the secondary reference to Mauer et al. recommends a particle size of less than 70 μm . Thus, the data provided is deficient in that there is no data that falls outside of the presently claimed range (i.e. 50 μm or less) but within the disclosed range of Mauer et al. (i.e. less than 70 μm) to demonstrate the criticality for the claimed range of particle size.

With regard to the arguments on the mixing temperature of 140°C or less, as noted in the previous office action, optimizing the mixing temperature to achieve optimal dispersion in Imamura et al. or Aoyama compositions would have been obvious to one of ordinary skill in the art. One skilled in the art would aim to mix at temperatures that would soften the rubber component adequately but not commence the vulcanization process, so as to achieve good dispersion. As such, the Imamura et al. reference also discloses that the vulcanization temperature may be from 100° to 200°C, preferably from 130° to 170°C (col. 4, lines 37-40). Thus, it would have been obvious to one skilled in the art to perform mixing step at temperatures below the vulcanization temperature, i.e. preferably 130°C, because with the onset of vulcanization, viscosity would increase rapidly making it difficult to accomplish uniform mixing.

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Furthermore, applicants argue that data provided in Table II of the instant specification demonstrates criticality of the mixing temperature. Specifically, the strengths when the mixing temperatures are 100, 120 and 140°C are superior to those obtained at 160°C and 180°C. Given that Imamura et al. reference teaches a preferred vulcanization temperature of 130° to 170°C, it is examiner's position that the trend is predictable because vulcanization of the rubber component would have advanced to varying degrees at 160°C and 180°C, prior to uniform dispersion of adhesion promoter is accomplished.

With regard to the remarks on the citation, examiner notes that the Mauer et al. reference recommends particle size of 70µm or less when the adhesion promoter has high melting point. Thus, the citation merely provides evidence to the fact that cobalt acetylacetonate is a high melting compound with a melting temperature of 172 °C.

With regard to the remarks on the Mauer et al. reference, examiner recognizes that the reference does not teach metal acetylacetonates as presently claimed. The reference is relied upon only for its teaching on recommended particle size of adhesion promoter particles to ensure adequate dispersion in the rubber composition. Given that the adhesion promoters of Mauer et al. are also metal-based complexes for use in vulcanized rubber compositions analogous to those of Imamura et al. and Aoyama references, the references are combinable.

In conclusion, the rejections of claims 1, 3-8 are maintained and new rejections set forth above for amended claim 2 and newly added claim 9 are necessitated by the amendment. Thus, the action is properly made final.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Satya Sastri at (571) 272 1112. The examiner can be reached on Mondays, Thursdays and Fridays, 7AM-5.30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. David Wu can be reached on 571-272-1114.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273 8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see [≤http://pair-direct.uspto.gov≥](http://pair-direct.uspto.gov). Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Satya B Sastri/

Examiner, Art Unit 1796